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INTERIM REPORT
1962

OIL SEEDS AND WHEAT

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A Cost of Production Study on 111 Farms

- Peace River
- Central Alberta
- Southern Alberta ; interim report, by

By K. D. PORTER, B. J. McBAIN and
G. R. KEAY

COST OF PRODUCTION SECTION
FARM ECONOMIC BRANCH, ALBERTA DEPARTMENT OF AGRICULTURE

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PREFACE

For many years the most important crop grown in Western Canada has been wheat. There has been no indication that it will be approached in value by another crop unless quota restrictions become more limiting than at any time in the past. However, it is possible that alternative exportable cash crops would have benefited Canadian farmers in the decade following World War II, when granaries all over the west were crammed with unsold wheat.

Vegetable oilseeds have in late years been suggested as an alternative crop. Of the oilseed crops, sunflower seed, and particularly rapeseed, have become commercially prominent in late years. Alberta was the last of the three prairie provinces to adopt production of rapeseed on a large scale.

In an effort to determine some of the economic relationships between the production of oilseeds and wheat, a study of selected areas was recently begun in Alberta. An analysis of the conditions of production and the application of resources to these crops in the year 1962 is outlined in this publication.

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Farm Economics Branch,
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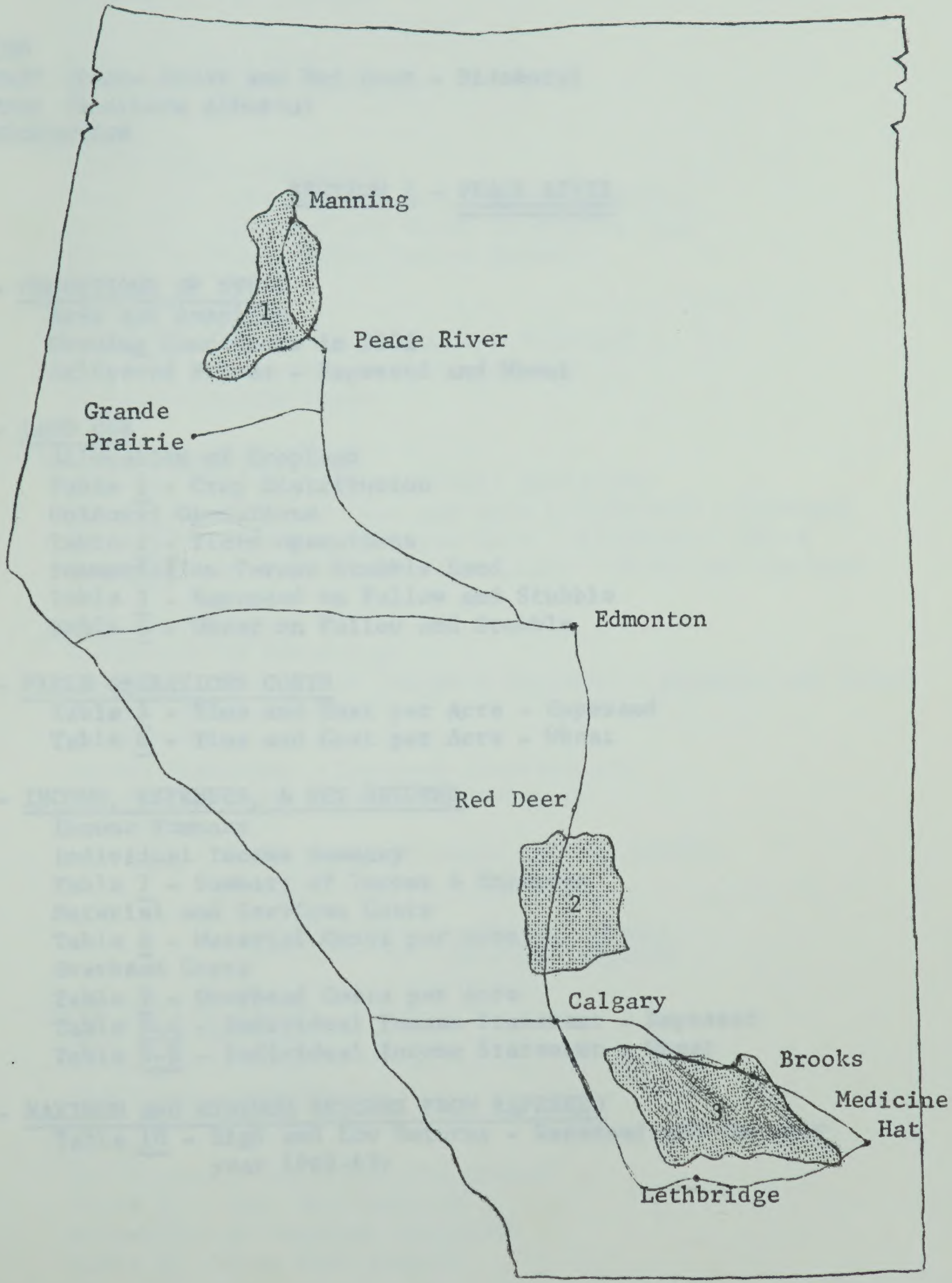
EDMONTON, Alberta.

OILSEED AREAS UNDER STUDY

Area No. 1	The Peace River Area	Rapeseed	1,869	acres	Wheat 3,166 acres
Area No. 2	The Red Deer-Didsbury Area	Rapeseed	2,822	acres	Wheat 2,892 acres
Area No. 3	The Southern Alberta Area	Sunflower	1,412.4	acres	Wheat 3,597 acres



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INTRODUCTION

Requests from sunflower growers and the oilseed processing industry in 1961 resulted in the establishment of a three year Cost of Production study under the authority of the Alberta Department of Agriculture and the administration of the Farm Economics Branch. A study was begun and a report was published in that year. This is the second interim report in the series and concerns the crop year of 1962.

The report deals with an analysis of Income and Expenses incurred in producing two important crops in Alberta. One is wheat, a crop of major importance. The other is oilseeds, an alternative crop of somewhat lesser importance, which has only been of significance in Western Canada since 1943. The oilseed crops, consisting of rapeseed and sunflower seed, were grown on 425,000 acres in Canada in 1962 and 216,000 acres in Alberta. There appears to be an assured future for growers supplying the increasing requirements for edible oils in Canadian and foreign markets.

In organizing the oilseed study the necessity of selecting a crop to compare with oilseeds was recognized. It was decided to choose a cereal grain as the comparative crop, and undertake as much analysis as was feasible with regard to the staff available and the adequacy of the records. Accounts of wheat and coarse grains were taken to assist in making the choice.

In 1961, the first year of the study, both rapeseed and sunflower seed were given an intensive analysis in regard to yield and cost per farm and per acre. Three cereal crops - wheat, oats, and barley were compared with the oilseeds in regard to yield only.

Of the 111 farm accounts secured in 1962, 103 were suitable for complete analysis of the oilseed and wheat enterprises. In the present report, wheat was selected to be given equal analytic treatment with oilseeds. Barley and oats were excluded in order to allow concentration on the two preceding crops.

The comparisons between crops were made with sunflower, rapeseed, and wheat, growing under similar circumstances and on the same farms. Revenue, expense, cultural practices, time required, and marketing conditions provided the basis for comparison.

Relative profitability was determined for the average and for the individual. Averages for each of the three respective areas are shown in this report. Individual farm analyses have been compiled and will be sent to the farmers concerned.

Acknowledgement of the assistance and cooperation of the participating farmers is due. Their interest and willingness to provide basic information has been invaluable.

The interpretation and analysis of the information was made by K.D. Porter, B.J. McBain, and G.R. Keay with the assistance of the clerical staff of the Farm Economics Branch.

SHORT SUMMARY

PEACE RIVER: Rapeseed - 32 Farms
Wheat - 24 Farms

	RAPESEED Per Acre	WHEAT Per Acre	See Page
Range in Yields (on Summerfallow)	300-1,650 lbs.	750-2,850 lbs.	
Range in Yields (on Stubble Land)	150-1,000 lbs.	500-1,700 lbs.	
Average Net Yield	820 lbs.	1,294 lbs.	9
Field Time - Labour	1.96 hrs.	2.01 hrs.	6
Field Time - Tractor	1.52 hrs.	1.50 hrs.	6
Field Time - Machines	2.49 hrs.	2.34 hrs.	6
Average Cost - Field Operations	$8.20	$7.08	6
Receipts	$30.54	$30.84	9
Cost of Production	13.84	15.03	9
Net Returns	16.70	15.81	9
Break-even point	369 lbs.	645 lbs.	

RED DEER - DIDSBURY:
(CENTRAL ALBERTA) Rapeseed - 39 Farms
Wheat - 30 Farms

	RAPESEED Per Acre	WHEAT Per Acre	See Page
Range in Yields (on Summerfallow)	450-1,900 lbs.	600-3,200 lbs.	
Range in Yields (on Stubble Land)	200-1,200 lbs.	380-1,800 lbs.	
Average Net Yield	898 lbs.	1,980 lbs.	21
Field Time - Labour	2.14 hrs.	2.34 hrs.	19
Field Time - Tractor	1.51 hrs.	1.65 hrs.	19
Field Time - Machines	2.81 hrs.	2.91 hrs.	19
Average Cost - Field Operations	$9.15	$9.40	19
Receipts	$34.00	$48.00	21
Cost of Production	18.65	22.79	21
Net Returns	15.35	25.21	21
Break-even point	491 lbs.	941 lbs.	

SHORT SUMMARY

SOUTHERN ALBERTA: Sunflowers (Dryland) - 7 Farms
Wheat (Dryland) - 14 Farms

	SUNFLOWERS Per Acre	WHEAT Per Acre	See Page
Range in Yields (on Summerfallow)	133- 894 lbs.	289-1,746 lbs.	
Range in Yields (on Stubble Land)	190- 329 lbs.	388- 692 lbs.	
Average Net Yield	299 lbs.	829 lbs.	34 & 37
Field Time - Labour	1.69 hrs.	1.55 hrs.	32
Field Time - Tractor	1.23 hrs.	.97 hrs.	32
Field Time - Machines	2.00 hrs.	1.90 hrs.	32
Average Cost - Field Operations	$7.50	$6.18	32
Receipts	$12.60	$20.72	34 & 37
Cost of Production	16.21	17.15	34 & 37
Net Returns	-3.61	3.57	34 & 37
Break-even point	384 lbs.	686 lbs.	

SOUTHERN ALBERTA: Sunflowers (Irrigated) - 29 Farms
Wheat. (Irrigated) - 15 Farms

	SUNFLOWERS Per Acre	WHEAT Per Acre	See Page
Range in Yields (on Summerfallow)	450-1,885 lbs.	917-3,492 lbs.	
Range in Yields (on Stubble Land)	95-1,523 lbs.	1,164-2,910 lbs.	
Average Net Yield	575 lbs.	2,054 lbs.	34 & 37
Field Time - Labour	5.46 hrs.	3.73 hrs.	31
Field Time - Tractor	3.61 hrs.	2.16 hrs.	31
Field Time - Machines	5.42 hrs.	4.21 hrs.	31
Average Cost - Field Operations	$18.25	$12.47	31
Receipts (14 Lease Contract-Sunflowers)	$50.50	$51.01	34 & 37
Cost of Production	34.55	28.97	34 & 37
Net Returns	15.95	22.04	34 & 37
Break-even point	362 lbs.	1,159 lbs.	
Receipts (15 Straight Contract-Sunflowers)	$26.79	$51.01	34 & 37
Cost of Production	30.93	28.97	34 & 37
Net Returns	-4.14	22.04	34 & 37
Break-even point	733 lbs.	1,159 lbs.	

Development of the Use of Sunflower and Rapeseed Oils

In the 1950's, private businesses effectively promoted margarine sales in Canada. Vegetable oils became part of dietary fashions. The building boom of the 1950's required greatly increased quantities of oils, lacquers, and paints. Certain medical formulae requested substitution of vegetable oils for animal fats and oils. Household uses for vegetable oil increased. Salad oils, cooking oils, and shortening were increased in vegetable oil content. Medical ointments, liniments and cosmetics adopted vegetable oils for a base. The sales for margarine, whose main constituents are foreign vegetable oils, increased greatly in Canada.

The price of oilseed in Canada is determined by the world price of vegetable oils. Canadian consumption is not yet a significant factor. The production of rapeseed, cottonseed, soya beans, cocoanut oil, sunflower seed, etc., in U.S.A., South America, Egypt, Europe and Asia, sets the price of vegetable oilseeds to the Canadian grower. Most of the Canadian Rapeseed crop is exported by way of the West Coast to foreign countries.

Alberta Oilseed Study Procedure

While vegetable oil can be produced in many climatic zones and from many species of plants, the matter of economic justification is extremely important to the producer. Prolific production of cocoanut oil, cottonseed oil, and soybean oil places a ceiling on the price of domestic oil seeds. Alberta farmers, even with their advantages of farm mechanization, have found the external competition is tough.

In order to be able to measure their economic position with reference to the oilseed crop, the growers have recognized the necessity of keeping adequate records. These were obtained by personal interview during two calls at each farm. The first in the early summer, the second after the harvest. Wherever possible, and in the majority of cases, the interviews were made in the residence of the operator, with the assistance of farm records and papers to substantiate items which required clarification.

In order to secure data that could be coordinated readily, cooperating farmers were encouraged to keep methodical records. In making the analysis, inadequate records were excluded.

The rapeseed yields and grade were confirmed where possible at the delivery points. Delayed deliveries were checked by contact with the farmer. Rapeseed grades were all sold as No. 1 Canada Rapeseed. The wheat yields were not capable of such close interpretation, as much of the crop was held on the farms. The farmer's estimate of total yield was taken. The average grade and dockage was based on advice from grain dealers and grain company figures for prior years.

The rapeseed prices used in the study for the 1962 crop were the composite of daily quotations through September, October, November, and December. Wheat prices were assessed to the various grades in view of what was expected to be the approximate Wheat Board payment.

PART I - CONDITIONS OF STUDY

Area and Sampling

The area being considered in this section of the oilseed cost of production study lies between Fairview and Manning, in the Peace River District. The Peace River District was selected to be studied because of the large amount of rapeseed that had been grown there. The area between Fairview and Manning was chosen within the Peace River District because it contained the greatest concentration of growers. An effort was made to make a major list of growers who were on similar soils. However, this proved to be impractical. The major list was then confined to the settled area south of, but including township 92, south to the Peace River and then as far west as Range 4, west of the 6th Meridian.

The names of 58 new rapeseed growers were obtained from the U.G.G. and Wheat Pool elevator agents in the towns and villages of Fairview, Bluesky, Whitelaw, Brownvale, Berwyn, and Grimshaw. Seven farmers on the study last year indicated that they were growing rapeseed again this year. These were automatically included in this year's sample. Of the 58 growers, thirty-five were selected at random to participate in this year's study. This number was reduced to 32 as three rapeseed accounts were not included in the analysis because of insufficient information or an irregularity in the cropping procedure which made them incomparable with the other rapeseed enterprises.

There were also 24 wheat enterprises which were chosen on these farms. They were given the same analytical treatment as rapeseed. This was done to determine the relative strength and weakness of each of these crops.

Farmers in the northern part of the area, in the vicinity of Manning, experienced difficulty in harvesting their crops in 1962. Recurrent wet weather kept the soil and grain in an unfit condition for satisfactory harvesting. In some cases the rapeseed was still unthreshed by late October. All but 6 of the rapeseed crops under study had been harvested by then.

Growing Conditions in 1962

The growing season in the Peace River District started out fairly dry and drought conditions were experienced on the lighter soils in the spring of 1962. The dry spring was then followed by a wet summer and fall; therefore, harvesting was delayed in most areas, the most serious being the Manning area. In spite of these adverse conditions, an average crop was harvested.

Delivered Prices - Rapeseed and Wheat

For the purpose of the study, the average grade of wheat was taken to be No. 5 Northern at a price of $1.45 per bushel ($2.33 per hundredweight). Rapeseed sales were valued at the actual outright price received by the farmer, or if the crop was pooled, at $1.87½ per bushel ($3.75 per hundredweight). This was the average price of outright sales between September 15th and December 31st, 1962. On Page 12, Table 10, the net returns from sale of rapeseed at the top price, February 6th to 12th are shown.

PART II - LAND USE

Allocation of Cropland

The first Table in this section outlines the use made of land on the thirty-two farms in this study. The average farm is over one section in size. The largest occupied several sections while the smallest was one quarter (160 acres) in size. Of the total occupied area, 34% was uncultivated. A large portion of this area will be converted to cultivated land as capital becomes available and the profitability of such expenditures continues.

TABLE 1

CROP DISTRIBUTION
(32 Farms)

	Total Acres	As % of Total Acres[a/]	Acres Per Farm	As % of Cult. Acres[a/]
Wheat	3,166	13	90	20
Rapeseed	1,869	8	53	11
Oats	1,421	5	41	9
Barley	2,370	10	68	15
Other Grain	1,998	8	57	12
Greenfeed & Hay	968	4	28	6
TOTAL CROPPED	11,792	48	337	73
Summerfallow	4,088	17	117	25
Tame Pasture	343	1	10	2
TOTAL CULTIVATED	16,223	66	464	100
Waste & Wild Pasture	8,456	34	241	
TOTAL FARM ACRES	24,679	100	705	

[a/] To nearest whole number.

Table 1 points out the importance of wheat to the grain farmer in that part of the Peace River area that we are considering in this study. There are several indications that the farmers on the oilseed study in the Peace River area are principally on a grain economy. From the Table it is noted that there is a large acreage of non-livestock crops such as wheat (20% of cultivated acres), and other grain (included here is rye, flax, grass seed and other crops). The small acreage occupied by tame pasture, greenfeed and hay also indicates that few cattle are kept on these farms. This points out the fact that rapeseed does not supplement a livestock enterprise.

The acreage occupied by rapeseed is higher than that for the remainder of the district because rapeseed farms were selected for this study. In 1961, 5.7% of the cultivated farm land was used to grow rapeseed in the Peace River area (Census Division #15). In 1962 this acreage was reduced to about 5% of the total cultivated land, due to official announcements of an apparent surplus of rapeseed.

Cultural Operations

The equipment required for the production of rapeseed is very little different from that used in the production of coarse grains. Rapeseed requires a firm finely worked seed bed to insure proper germination. Surface moisture is more critical for rapeseed than for wheat or coarse grains.

The first difference in procedure for rapeseed production is in the seeding operation. There are several alternatives. The majority of the growers used cracked wheat as a carrier for the small rape seeds in the common grain drill. Several used fertilizer as the carrier but the corrosive elements of the fertilizer damaged the seeding mechanism of the drill. The second alternative was to use the grass seeder attachment on the grain drill. This method was also satisfactory. It is apparent from Table 2 that the seeding of rapeseed required a twice-over operation. It was the general practice on all farms to pull harrows or packers behind the seed drill when sowing rapeseed. This practice insured a firm seed bed. While this is a good procedure, only one-half of the farmers treated their wheat land this way.

The summer operations on the wheat land in the Peace River area included efforts by the farmers to control weeds through the use of 2-4-D. Rapeseed, being susceptible to 2-4-D, was not sprayed with this weed killer. In 1962 the farmers did not find it necessary to spray the rapeseed fields for insects such as the flea beetle. This may have resulted from previous use of the seed treatment to control the flea beetle.

The harvesting operations of rapeseed and wheat differed very little in time requirement but quite substantially in application of machines. A much smaller acreage of rapeseed was swathed. This is the result of past experience with the swathed rapeseed blowing and thereby causing the loss of the entire crop. More rapeseed is lost by shattering because of the two operations. Due to local conditions, two farmers on the study found it more profitable to cut their wheat with a binder, stook it and then use a threshing machine rather than a combine, or swather and combine for the harvesting operation.

Recorded below are common cultural practices in respect to the rapeseed and wheat crops.

TABLE 2 FIELD OPERATIONS

	Number of Times Over [a]	
	Rapeseed	Wheat
Preseeding operations:		
on fallow	8.0	9.0
on stubble	4.0	5.0
Seeding:	2.0	1.5
Summer operations:	0.0	0.2
Harvest operations:	1.2	1.3

[a] Tandem operations were regarded as two or more.

In reference to Table 2 on page 3, harvesting may be singled out as an operation which is performed in fashion similar to that in Southern Alberta. Straight combining was the general rule in both rapeseed and wheat. Swathing occurred on only 6 out of 32 rapeseed enterprises, and 7 out of 24 wheat enterprises. This procedure is the reverse of the usual practice in Central Alberta where swathing is done before combining in order to hasten maturity of the crops. Apparently, the longer daylight hours of sunshine encourage faster growth and maturity in Peace River than in Central Alberta.

Custom services in harvesting were used to a considerable extent on the Peace River study farms. On-the-farm custom jobs in the rapeseed crops amounted to 6 custom combining, 2 custom swathing, and 2 custom hauling. Two wheat enterprises were custom combined and 1 was custom hauled. Two wheat enterprises were harvested with a binder and a threshing crew.

Summerfallow Versus Stubble Land

Almost half the wheat and rapeseed enterprises respectively were grown on stubble land. That proportion is significantly higher than is ordinarily expected in other areas of the province. Under conditions of greater precipitation, the storing of moisture by summerfallowing is not so necessary as it may be in southern areas. It is the need to eradicate troublesome weeds, which is more often the reason for summerfallowing in northern areas. If adequate commercial fertilizer is applied, it may be that this practice of summerfallowing could be decreased with certain economic benefits. The Table on the previous page arose out of the study of the yields of crops grown on summerfallowed and stubble land.

As can be seen from Table 4, the increased yield from wheat on fallow failed to pay for the additional cost of summerfallow. Rapeseed on fallow fared somewhat better by returning $3.67 over the additional cost of the summerfallow operation. In this area from the basis of the yields and prices of the 1962 crop year, it would appear that if summerfallow land is available, greater profit from its use would be realized in growing rapeseed rather than wheat.

The increased crop costs of the summerfallow operation are a result of a greater total number of cultivations (labour and equipment costs) as well as its bearing the cost of two years overhead in the form of land taxes and interest on the money invested in land. It must be pointed out here that the farmer also foregoes one year's net profit from the land that is being summerfallowed. In other words, he has the alternative of planting another crop on stubble rather than summerfallowing.

TABLE 3 COMPARATIVE COSTS AND RETURNS PER ACRE FROM RAPESEED GROWN ON FALLOW AND STUBBLE

	FALLOW (A) 18 Enterprises		STUBBLE (B) 16 Enterprises		DIFFERENCE DUE TO FALLOW (A - B)	
GROSS RECEIPTS		$33.38		$22.71		$15.67
CROP COSTS						
Material	$2.14		$2.00		$ .14	
Overhead (excl. mach.)	4.91		2.07		2.84	
Labour & Equipment	9.67		6.65		3.02	
TOTAL CROP COSTS		16.72		10.72		6.00
NET RETURNS		$21.66		$11.99		$ 9.67

TABLE 4 COMPARATIVE COSTS AND RETURNS PER ACRE FROM WHEAT GROWN ON FALLOW AND STUBBLE

	FALLOW (A) 16 Enterprises		STUBBLE (B) 12 Enterprises		DIFFERENCE DUE TO FALLOW (A - B)	
GROSS RECEIPTS		$36.87		$31.49		$5.38
CROP COSTS						
Material	$3.98		$3.87		$ .11	
Overhead (excl. mach.)	5.34		2.77		2.57	
Labour & Equipment	8.62		5.70		2.92	
TOTAL CROP COSTS		17.94		12.34		5.60
NET RETURNS		$18.93		$19.15		-$ .22

COMPARATIVE COSTS AND RETURNS PER ACRE FROM FALLOW AND STUBBLE

Approximately 25% of the cultivated farmland was summerfallow in 1962. The preceding Tables point out the costs and returns per acre from this practice. In some cases, Rapeseed and Wheat were grown on summerfallow and stubble land on the same farm. This accounts for the increased number of enterprises shown above.

PART III - FIELD OPERATIONS COSTS

Tables 5 and 6 show the labor, tractor and machine costs in greater detail. Labor in the Peace River District was priced at 72 cents per hour. This was calculated from the average monthly wages paid by farmers, plus an additional allowance for room and board, then expressed as an hourly charge.

Tractor and machine cost charges were taken from Cost Tables for Alberta. These Tables were developed out of studies of farm machine use in 1961.[1] The charges were figured on a representative hourly basis and are applied accordingly in this study.

TABLE 5

TIME AND COST PER ACRE ON FIELD OPERATIONS IN THE PRODUCTION OF RAPESEED

(32 Farms)

FIELD OPERATIONS	LABOR		TRACTOR		MACHINE		TOTAL	
	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost
Preseeding	1.13	$ .81	1.13	$1.57	1.39	$ .74	3.65	$3.12
Seeding	.28	.20	.27	.37	.39	.33	.94	.90
Summer	-	-	-	-	-	-	-	-
Harvest	.55	.45	.12	.16	.71	3.57	1.38	4.18
TOTAL	1.96	$1.46	1.52	$2.10	2.49	$4.64	5.97	$8.20

TABLE 6

TIME AND COST PER ACRE ON FIELD OPERATIONS IN THE PRODUCTION OF WHEAT

(24 Farms)

FIELD OPERATIONS	LABOR		TRACTOR		MACHINE		TOTAL	
	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost
Preseeding	1.13	$ .82	1.13	$1.61	1.50	$ .73	3.76	$3.16
Seeding	.29	.21	.24	.33	.32	.36	.85	.90
Summer	.01	.01	.01	.02	.02	.01	.03	.05
Harvest	.58	.43	.12	.17	.51	2.37	1.21	2.97
TOTAL	2.01	$1.47	1.50	$2.13	2.35	$3.47	5.85	$7.08

The time and cost per acre in field operations in the production of rapeseed changed very little from the last year.[2]

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[1] Costs per Hour - Machine Use (Alberta) - F.M.D.M. 403, Alberta Department of Agriculture.

[2] Cost of Oil Seed Production (Alberta - 1961), Alberta Department of Agriculture.

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In reference to this relationahip, there was a slight reduction in the time and cost of seedbed preparation in 1962. This could reflect a reduction in the amount of rapeseed sown on summerfallow. The seeding operation remained unchanged. This year there were no summer operations, while last year's report revealed that an average of .01 hours labor was used.

The general increase in the harvesting time per acre in regard to the rapeseed crop was due to the additional tractor and truck use.

More tractor and pull-type [1/] harvestor combinations were used in 1962 than in 1961. Extra trucks were used as convenient field dumps in 1962. Thus, both Tractor and Machine Time increased in 1962.

The time spent and cost in the production of Wheat was .12 hours and $1.12 less than that required in the production of Rapeseed. The most significant difference is the time and cost of machines used in harvesting. The greater cost reflects the additional care that was required in the harvesting of the small rape seeds. It is also true that in many cases, rapeseed was hauled directly to the elevator, while the wheat was dumped from the combine into the granary. Therefore, the truck use for rapeseed was greater than that for wheat. This portion of machine cost amounted to 50 cents per acre for rapeseed and 24 cents per acre for wheat. About 4% of the area seeded to wheat was harvested with binders and threshing machines. This was bound to have some effect on the labor and machine time and costs. (e.g. increased labor time and costs - slightly increased machine costs for thresher, binder, wagons).

While the wheat enterprise used the same number of tractor hours in harvest as the rapeseed enterprise, it should be pointed out that this time includes the tractors used by those who threshed as well as the operators who used a tractor to pull the swather or a pull-type combine.

The total wheat seeding operation took less time and cost than did the same operation for rapeseed. This is indicated by the time the tractor was used (.27 hours for rapeseed and .24 hours for wheat). Additional labour was required in the wheat seeding operation as a large number of farmers cleaned their own seed. This was not the case for the majority of the rapeseed growers. Harrows or packers were pulled behind the drill in most cases when seeding rapeseed. This was necessary because of the requirement of a firmer seedbed than is usual for wheat.

PART IV - INCOME, EXPENSES AND NET RETURNS

Income Summary

The Table illustrated on page 9 is a summary of income and expenses on a per acre basis for both wheat and rapeseed.

The figures in the columns are the average of the rapeseed and wheat growers in regard to their yields, their corresponding receipts and their expenses. Each grower may have had a different size of enterprise and may have spent varying amounts of time, labor, and money. But in all cases, his efforts were a significant portion of his business during the year of 1962, and they have been transformed into their dollar values in order to measure the economic success of the venture. Such success

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[1/] Cost of Oil Seed Production (Alberta - 1961).

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

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[illegible]

is indicated in the Table as Net Returns. A comparison between the average Net Returns for rapeseed and wheat shows the relative profitability of the two enterprises.

The average yield on the thirty-two farms studied was 820 lbs. of rapeseed per acre for an average return of $30.54. This is an average return of $3.72 per hundredweight. Therefore, several farmers sold their rapeseed for an outright price below the price used in calculating gross returns for those who had sold their crop on a pooled basis.

The average yield of wheat was 1,294 pounds (21.6 bushels) per acre. The average grade was No. 5 Northern. [1/] The estimated return from this grade of wheat was $2.33 per hundredweight ($1.40 per bushel), considered as delivered at the local elevator.

Following Table 7 are the separate groups of expenses dealt with in more detail.

Individual Income Summary

There is an additional statement in the report which goes to each participant in the study. It is in a form similar to the general Income Statements which have been mentioned above. It will provide a business analysis on a personal basis and will permit a comparison with the group average. This personal Statement follows after the general Statement on two supplementary pages.

There is a considerable degree of merit in measuring personal performance against that of the average grower. It should be remembered that "being average" still leaves plenty of room for individual improvement. Since the Net Return is the measure of the economic success of the enterprise, a careful study of each comparable item in the statement is warranted with the object being to search out the reason for varying degrees of success.

When making comparisons between your returns and the average for the district, be particularly careful when comparing material costs. All the farms were totaled and then an average of all acres was taken. On some farms, certain materials or services were not used. That eliminated the cost of the material or service for these farms. This is why the average costs for seed treatment, fertilizer, weed spray, and crop insurance may be less than your cost for the same materials and services. The remaining costs - Overhead and Field Operations - were common to all enterprises and should serve as a realistic means of comparison for your purpose.

The additional expense of using an operation not common to the group should be justified by a greater return than the average, otherwise a change in the plan of operations is indicated.

[1/] Taken from Alberta Wheat Pool estimate of Grade 1962.

TABLE 7 SUMMARY OF INCOME, EXPENSES, AND NET RETURNS - PER ACRE

	Group Averages	
	Rapeseed Per Acre	Wheat Per Acre
Number of Farms Studied	32	24
Average Yield in lbs. per Acre	820.0	1,294.0
RECEIPTS:	$	$
Sale of Crop	30.54	30.84
Other Income from Crop	-	-
Value of Crop on Hand [a/]	-	-
Gross Returns	30.54	30.84
EXPENSES:		
Seed	.84	2.49
Seed Treatment	.29	.26
Fertilizer	.90	.97
Weed Spray	-	.09
Insect Spray	-	-
Bird Repellents	-	-
Crop Insurance	.07	.15
Miscellaneous	-	-
Total Materials & Services	2.10	3.96
Land Tax	.87	.97
Water Rights	-	-
Rent or Shares	-	-
Int. on Land to Crop	2.44	2.50
Int. on Bldgs. to Crop	.08	.17
Dep'n on Bldgs. to Crop	.15	.35
Total Overhead (less equip. overhead)	3.54	3.99
Labor	1.46	1.47
Tractor Use	2.10	2.13
Machine Use	4.64	3.48
Truck Use	-	-
Custom Work	-	-
Total Labor & Equip. Cost	8.20	7.08
TOTAL CROP COSTS	13.84	15.03
NET RETURNS	16.70	15.81

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a/ Assumption for purpose of study - All crop sold.

Material and Services Costs

Following is a reproduction of the Material section of Table 7 and the explanation of its content. The average cost for fertilizer, seed treatment, weed spray and crop insurance were below the actual costs because these items were not used on all farms. For example, crop insurance for the largest part of the area was rated at 6%, the average coverage is $10.00, which means that crop insurance costs 60 cents per acre. This study showed the cost at 7 cents for rapeseed because only five farms out of thirty-two bought hail insurance.

Seed was the only uniform cost to all the growers. When seed was cleaned commercially, the exact cost of the cleaning was recorded but when seed was cleaned at the farm, an allowance was made in the Labor and Equipment section to cover the cost. A price of $1.55 per bushel was allowed for uncleaned wheat. In the few instances where the farmer's own rapeseed was used for seed, it was priced at $7.00 per cwt., cleaned.

TABLE 8

MATERIAL COSTS PER ACRE

	RAPESEED	WHEAT
Seed	$ .84	$2.49
Seed Treatment & Cleaning	.29	.26
Fertilizer	.90	.97
Weed Spray	-	.09
Insect Spray	-	-
Crop Insurance	.07	.15
Miscellaneous	-	-
TOTAL MATERIAL COST	$2.10	$3.96

Table 8 shows that the major difference in material costs between rapeseed and wheat originated in the difference in the cost of the seed. The general procedure in seeding rapeseed was to use close to 8½ lbs. of rapeseed per acre and 1½ bus. of wheat in seeding the wheat crop. The actual average cost per acre as shown in the Table above was 84 cents for rapeseed and $2.49 for wheat. Thus, the cost of seeding wheat alone was three times that of rapeseed per acre. This accounted for most of the higher material costs in the production of wheat. Crop insurance for wheat was purchased for a larger number of acres than was the case for rapeseed. This explains why the insurance cost per acre for wheat is higher. Rapeseed, being susceptible to damage from 2-4-D, was not sprayed for weeds, while seven out of twenty-four farmers sprayed their wheat fields.

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Overhead Costs (excluding equipment overhead)

Table 9 depicts the breakdown of overhead costs. It must be pointed out here that the depreciation of equipment and interest on the money invested in equipment does not appear under this heading, but is included in Tractor and Machine Costs. Land taxes were recorded at the farm on a per quarter or section basis. This figure was then reduced to a cost per acre for the purpose of this study. Interest was calculated at 5% of the market value of the land (what the land could be sold for). Crop on summerfallow was charged with two year's taxes and interest. Interest on buildings used for the crop (granaries) was calculated at 5% of half the initial cost of the buildings. Depreciation of buildings was calculated on a straight line basis of 20 years, or 5% per year.

TABLE 9 OVERHEAD COSTS PER ACRE

	RAPESEED	WHEAT
Land Taxes	$ .87	$ .97
Interest on Land	2.44	2.50
Interest on Buildings	.08	.17
Depreciation on Buildings	.15	.35
TOTAL	$3.54	$3.99

Land taxes and interest on land were both higher for wheat, than for rapeseed. This difference occurred because more wheat than rapeseed was grown on summerfallow (54% of wheat was on fallow, 49% of rapeseed was on fallow). Building charges were higher for wheat because:

1. most of the rapeseed was sold direct from the combine or with very little storage on the farm - and -

2. the rapeseed yield, being less than wheat, required less storage.

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

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PART V - MAXIMUM AND MINIMUM AVERAGE RETURNS FROM RAPESEED SOLD DURING THE WINTER OF 1962-63

Rapeseed is one of the grains which is not pooled by sale through the Canadian Wheat Board. However, there are several elevator companies which will accept rapeseed to be sold on a pooled basis. The initial price paid for rapeseed on this basis is below the anticipated final price by a reasonable safety margin. During the crop year the elevator company sells the rapeseed at prices which fluctuate from day to day, depending on supply and demand. At the end of the year the farmer receives a final payment which brings the total payment up to equal the average sales price for the year.

The total world demand for edible vegetable oils has decreased slightly over the past two years. The supply has varied greatly from year to year. Therefore, the fluctuations of the price of rapeseed are in response to changes in supply rather than changes in demand. The price of rapeseed in Canada depends on the Canadian supply but to a greater degree on the size of the crop of rapeseed in other countries. Europe, China, and India produce about 75% of the world's supply. Canada produces about 2% of the world's production, but Canada's rapeseed made up 47% of all exports in 1959. The supply of other vegetable oils such as soybean oil, palm oil, and cotton seed oil, also affects the price the farmer receives for his rapeseed.

During the third week of September, rapeseed was sold to the country elevators for $1.94 per bushel ($3.88 per cwt.), less freight to Vancouver. (Freight to Vancouver from Brownvale is 27.5 cents per hundredweight). Towards the end of September, the price fell to $1.88 per bushel and remained there for the first half of October. From then until Christmas, the price advanced steadily. After the New Year, the price increased rapidly to a peak of $2.79 per bushel around February 10th. Since then the price has slowly fallen until in mid-June, 1963, the price was $2.21 per bushel.

Below is a Table showing the Net Returns from rapeseed resulting from sale at the lowest price September 13th, 1962 and the top price, February 6th, 1963.

TABLE 10 AVERAGE NET RETURNS PER ACRE FROM RAPESEED WHEN SOLD AT THE LOWEST AND AT THE HIGHEST PRICE DURING WINTER OF 1962-63 [a/]

	PEACE RIVER		CENTRAL ALBERTA	
	Low ($3.42/cwt.)	High ($5.25/cwt.)	Low ($3.47/cwt.)	High ($5.30/cwt.)
Gross Receipts	$28.04	$43.05	$31.16	$47.59
Crop Costs	13.84	13.84	18.65	18.65
NET RETURNS	$14.20	$29.21	$12.51	$28.94

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a/ Average yields for Peace River - 820 lbs. per acre; Central Alberta - 898 lbs. per acre.

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[illegible]

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[illegible]

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SECTION II - RED DEER - DIDSBURY

PART I - CONDITIONS OF STUDY

Disposition of the Rapeseed Crop in 1962

This area may be referred to as Central Alberta. It is the largest area of rapeseed production in the province. Outright sales of rapeseed occurred on 60% of the farms in this study group. In the remaining 40% of the group, the pattern of sales varied from partly outright sale to completely pooled. Larger purchases of Canadian rapeseed by Japanese interest in mid-winter of 1962-63, caused a sharp increase in the Canadian price and were accompanied by heavy deliveries from farm-stored supplies in Alberta and Saskatchewan. Red Deer - Didsbury rapeseed growers who had rapeseed on hand, took advantage of the price situation and sold the oil-seed. Grain companies and Pools also participated in selling to the Japanese buyers. Growers who sold to a Pool organization will benefit in the future in respect to those sales.

In evaluating the wheat crop in the Red Deer - Didsbury study area, it appeared that the general grade in 1962 was No. 4 Northern. Some damage to grain was suffered in an early frost. Dockage was estimated at 3% unless sales tickets established an exact percentage. Since most of the 1962 wheat crop had not been delivered in that year, the grower supplied the estimated yield on the wheat in farm storage at the time of the interview.

Bushel Weights

In case there may be some unfamiliarity with the commercial weights per bushel of some grains, rapeseed weighs 50 lbs. per bushel, sunflower seed weighs 30 lbs. per bushel, and wheat, 60 lbs. per bushel. Wheat and rapeseed prices are commonly quoted in terms of a bushel. However, because of the difference of 10 lbs. in the respective bushel weights, comparisons on the bushel basis between the two crops is not equitable. A more suitable comparison may be made in terms of pounds or hundredweight.

Varieties of Wheat

There were several varieties of wheat and rapeseed grown on the study farms. They are shown as follows:

WHEAT

Thatcher
Selkirk
Saunders
Canthatch
Chinook
Garnet
Kenhi
Lemhi
Stewart
Ramsey

RAPESEED

Polish
Argentine

Canthatch, Saunders, and Thatcher spring wheat were widely grown due to their adaptability to different climatic conditions, and their capacity to resist rust. They were equally popular in the Central Alberta and Northern Alberta regions. Chinook, Rescue and Selkirk were additional varieties grown south and east of the Alberta black soil zone. Their resistance to the wheat stem sawfly and certain strains of rust was advantageous to farmers. Garnet Wheat, which has a somewhat lower milling quality, was grown on some farms in the Central and northern districts. The durums - Stewart and Ramsey, were grown in the light brown soil zone. Kenhi and Lemhi, the soft white spring wheats were grown on several farms in the Irrigation areas. This wheat was usually contracted for companies dealing in pastry flour.

The rapeseed varieties were limited to Polish and Argentine. The Polish type with the name of Arlo was grown to almost complete exclusion of the Argentine type. The reasons were earlier maturity and almost equal yield.

PART II - LAND USE

Allocation of Cropland

The Table below is a consolidation of the acres of crop, summerfallow, tame and wild pasture on the study farms. This is an area of mixed farming, none of which is under irrigation.

TABLE 11

CROP DISTRIBUTION
(39 Farms)

	Total Acres	As % of Total Acres[a]	Acres Per Farm	As % of Cult. Acres[a]
Wheat	2,892	11	74	13
Rapeseed	2,822	11	73	13
Oats	2,331	9	60	10
Barley	5,468	20	140	25
Other Grain	315	1	8	1
Greenfeed & Hay	2,189	8	56	10
TOTAL CROPPED	16,017	60	411	72
Summerfallow	5,089	19	130	23
Tame Pasture	1,129	4	29	5
TOTAL CULTIVATED	22,235	83	570	100
Waste & Wild Pasture	4,740	17	122	
TOTAL FARM ACRES	26,975	100	692	

[a] To nearest whole number.

The arrangement of the crops as indicated above, shows that the land sown to rapeseed was equal in area to that of wheat. Oats was sown to almost the same extent. The barley acreage was almost twice as large as that of any crop, being 20% of the total farm area. Greenfeed and hay were also significant. Summerfallowed land accounted for 5,089 acres which was 19% of the total farm area. Wild pasture amounted to 17% of total land.

This disposal of crops shows that a livestock-grain economy is practised on the farms in the study group. The large barley acreage indicates that hog production is an important enterprise.

Since the rapeseed acreage was equal to the wheat acreage, even at a time when export wheat sales were good, it appears that farmer interest in the crop was high. Rapeseed itself is not a livestock feed, though the meal, after oil extraction is used as a protein supplement. Rapeseed can be sold outright as a cash crop. Rapeseed, which is not subject to quotas, may be considered by some farmers as an acceptable substitute for some of the wheat crop. For these reasons, rapeseed occupies its place in the present farming program of this area.

Cultural Operations

The practices commonly used in field operations for both wheat and rapeseed crops in this area are quite similar. The greatest differences appear to result from the farmer's estimate of the comparative profitability of the two crops. Farmers tend to put what they consider their most valuable crops on summerfallowed land. Among the group of study farms in the Red Deer - Didsbury area, wheat was grown on summerfallowed land in 75% of the instances and rapeseed in 56% of the instances. This relationship meant that considerably more field time had been applied to the production of wheat than to the production of rapeseed.

Some of the differences in procedure between growing the two crops can be summarized briefly. Most farmers mix rapeseed with a carrier for ease of seeding. Wheat requires none. Quite often a drag and a harrow are pulled behind the rapeseed drill because of the necessity of positive coverage for the shallow seeded rapeseed. A desirable seed bed for rapeseed is finer and firmer than that required for wheat. A limiting factor in the production of rapeseed is the competing weed growth. Rapeseed, unlike wheat, is extremely susceptible to 2-4-D weed spray. Therefore, care must be exercised in spraying the fields adjacent to rapeseed.

The harvesting of rapeseed in Central Alberta appeared to be carried out differently from that in the Peace River area. The crop had to be swathed first and allowed to ripen before combining took place. In the Peace River country, 85% of the rapeseed crop under study was "straight combined". Several factors seem to have caused that difference in procedure. The greater number of hours of sunshine per day seemed to speed the plant growth in the more northern Peace River area. The greater possibility of wet weather and consequent spoilage of swathed grain in that area caused farmers to avoid the swathing operation. An additional weather hazard - wind - which has in the past blown swathed rapeseed completely off the fields, has also influenced farmers to use the straight combining technique. The relatively lesser effect of these factors in the Red Deer - Didsbury area permitted the use of the swathing procedure.

The procedure in combining rapeseed did not vary in any of the study areas. The same machines were used for the combining of the wheat crop. However, there was one observed difference in combining rapeseed. This was adjustment to a slower cylinder speed and the use of finer screens. Also, the forward speed of the combines was reduced to one-half that of the wheat crop. This was a paying practice because the heavy rapeseed chaff often plugged the screens and resulted in the loss of valuable seed, unless a very slow speed was maintained.

TABLE 12

FIELD OPERATIONS

	Number of Times Over [a]	
	Rapeseed	Wheat
Preseeding operations:		
on fallow	13	10.5
on stubble	7	5.0
Seeding:	2	1.3
Summer operations:	0	0.8
Harvest operations:	2	2.0

[a] Tandem operations were regarded as two or more.

PART III - CROP YIELDS

Bushel Price Evaluations

Wheat and rapeseed were grown on both summerfallow and stubble. There were significant differences in the yield as might be expected. However, the costs incurred in summerfallowing and those incurred in production after a preceding crop were also significantly different. The net difference in dollar returns is quite important from an economic point of view.

Rapeseed was sold as No. 1 Canada Rapeseed. Wheat, on the basis of field reports from this area, was graded No. 4 Northern. The price at the shipping point for rapeseed was $3.80 per cwt. (3.8 cents per lb.) 1/ - for wheat it was assessed at $1.45 per bushel (2.42 cents per lb.) 2/.

The following Tables show the comparative Net Yields and values of the Rapeseed and Wheat crops which were grown on land after summerfallow or following a crop. There were 39 farms with 51 rapeseed enterprises. Thirty of those farms had 36 wheat enterprises.

TABLE 13 GROWN ON SUMMERFALLOW

Number of Enterprises	Acres	Total Yield bu.	Net Yield bu.	Net Yield Per Acre bu.	Value Per Acre
Rapeseed: 29	1,663	37,754	35,546	21.3 (1,068.7 lbs.)	$40.61
Wheat: 27	2,399	85,915	83,336	34.7 (2,084.3 lbs.)	$50.44

TABLE 14 GROWN ON STUBBLE LAND

Number of Enterprises	Acres	Total Yield bu.	Net Yield bu.	Net Yield Per Acre bu.	Value Per Acre
Rapeseed: 22	1,159	16,380	15,165	13.1 (654.2 lbs.)	$24.86
Wheat: 9	493	12,496	12,121	24.6 (1,475.1 lbs.)	$35.70

Yields on Summerfallow Versus Stubble

The value of wheat production was greater per acre than rapeseed, as shown in both Tables. The ratio of yields was 2 lbs. of wheat to 1 lb. of rapeseed on summerfallow. The ratio on stubble was also 2 lbs. of wheat to 1 lb. of rapeseed. However, the ratio of values - wheat to rapeseed - was about 1.25 and 1.5 to 1.0. In regard to rapeseed values, the difference in gross returns per acre between summerfallow and stubble was $40.61 - $24.86 = $15.75. In regard to wheat values, the difference in gross returns per acre between summerfallow and stubble was $50.44 - $35.70 = $14.74.

1/ Average daily price, shipping point September 15 - December 31.

2/ Expected range + or - 5 cents per bushel.

Yields on Summerfallow Versus Stubble (Cont'd.)

At a determined range of $7.50 to $8.25 per acre for summerfallowing, both crops on summerfallow returned about 1.5 times these amounts as a margin over the crops on stubble. Summerfallowing for the purpose of recovering fertility may have been economical under the circumstances. However, that is not meant to say that a summerfallow grain rotation will provide a higher net income than successive cropping in a longer rotation.

There may be room for further investigation of wheat production on stubble, especially in areas of adequate rainfall. In reference to "Value Per Acre" to Wheat in Tables 13 and 14, if a four-year programme of wheat on various kinds of stubble were compared to a four-year summerfallow-wheat rotation, it might follow mathematically that the first practice would return 4 x $35.70 = $142.80 net, and summerfallowing only 2 x $40.61 = $81.22 net. Similarily with rapeseed. Fertilization practices, cultural methods, plant diseases, weed control, and other factors would have an important bearing on the outcome. However, there may be some merit in attempting an economic measurement of alternatives to summerfallowing in the Central and Northern zones of Alberta.

The rapeseed-wheat relationships changed considerably from those reported in the 1961 study in that area. Rapeseed on summerfallow in 1961 produced almost pound for pound with wheat. On stubble, rapeseed produced 1.5 lbs. to 1 lb. of wheat. On account of the drouth in 1961, germination of wheat was poor. Late rains helped to germinate the dormant rapeseed kernels and thus started a second growth which was harvested. Those rains were too late to help the cereal crops. Moisture conditions were more nearly normal in 1962 so it is possible that further studies will tend to substantiate the 1962 ratio of rapeseed to wheat yield.

PART IV - SHARE ARRANGEMENTS

Share arrangements were quite common among the farmers. There were 10 such deals in the rapeseed enterprises and 6 in regard to wheat.

TABLE 15 OWNERSHIP - RAPESEED CROP LAND

	Owned Land 27 Farms		Shared Land 6 Farms	
	Acres	Value	Acres	Value
Total Acreage	2,204	$145,407.00	618	$45,958.00
Per Farm	66.7	4,406.63	61.8	4,595.80
Per Acre	-	65.97	-	74.37

There were 618 acres involved in 10 share deals regarding rapeseed production in the study group. Two-thirds of this was summerfallow land. The universal arrangement was a one-third crop share to the landlord with the operator supplying everything but the land. The average value of the landlord's share of the 1962 crop amounted to $11.56 per acre, which was a return of 15% on the average land value. One-half the shared crop was on stubble land.

TABLE 16

OWNERSHIP - WHEAT CROP LAND

	Owned Land 27 Farms		Shared Land 6 Farms	
	Acres	Value	Acres	Value
Total Acreage	2,270	$153,978.00	622	$40,680.00
Per Farm (land value)	84.1	5,702.89	103.7	6,780.00
Per Acre (land value)	-	67.83	-	65.40

There were 6 share deals among the 30 wheat growers. There were 622 acres of crop in total, all operated under a one-third crop share agreement. Only 80 acres were cropped the previous year. The landlord's share in 1962 averaged $20.05 from the combine, on the basis of $1.45 wheat at the elevator. This was a return of 30% on the acreage land value. Only one-eighth of the shared wheat crop was on stubble land.

Contribution and Share

The practice of share cropping is becoming more widespread in Alberta every year. The common basis continues to be a one-third-two-thirds arrangement. The 30% return to the landlord's investment on wheat land (Table 16) appeared to be very good. The return on the rapeseed arrangements at 15% of the investment was also good (Table 15). Normally the principle of "division of profits in the ratio of contribution of expenses" is the guiding procedure in share arrangements. It has been suggested that the one-third-two-thirds deal favors the landlord. Under examination, this contention does not hold water. The conception of equal contributions must include risk besides material contribution. The landlord has the most to lose in cases of inefficiency and adverse conditions. He usually has more alternatives than the renter or share cropper in planning and handling his real property. These facts are the intangibles which will tend to maintain the landlord's seemingly superior bargaining position in regard to the traditional one-third-two thirds arrangement.

PART V - FIELD OPERATIONS COSTS

Time and Cost Per Acre on Field Operations

The field operations involving oil seeds crops were classified according to time and cost under four main headings. They were Seed-bed Preparation, Seeding, Summer Operations, and Harvesting. Harvesting included all field hauling in regard to both rapeseed and wheat.

All costs were calculated on a per hour basis, then translated into a per acre charge where necessary. Labor rates were determined from recorded monthly wages with board. Machine and tractor rates were based on normal hours of use and local fuel costs. Approximate horsepower was the basis of fuel consumption. Variations in the amount of machine use from farm to farm were dealt with individually by means of a Table of hourly costs in terms of Average Use - Above Average Use - Below Average Use.

The following Tables are an account of the time and cost of Field Operations in the rapeseed and wheat enterprises. Four seasonal periods are shown, and three general types of expense - labor, tractor and machine - are listed. The addition of the wheat enterprise schedule below was made possible by securing adequate information in 1962.

TABLE 17

TIME AND COST PER ACRE ON FIELD OPERATIONS IN THE PRODUCTION OF RAPESEED (39 Farms)

FIELD OPERATIONS	LABOR		TRACTOR		MACHINE		TOTAL	
	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost
Preseeding	1.09	$ .92	1.04	$1.45	1.54	$ .81	3.67	$3.18
Seeding	.23	.20	.24	.33	.32	.34	.79	.87
Summer	.01	.01	.01	.01	.01	.01	.03	.03
Harvest	.81	.69	.22	.31	.94	4.07	1.97	5.07
TOTAL	2.14	$1.82	1.51	$2.10	2.81	$5.23	6.46	$9.15

TABLE 18

TIME AND COST PER ACRE ON FIELD OPERATIONS IN THE PRODUCTION OF WHEAT (30 Farms)

FIELD OPERATIONS	LABOR		TRACTOR		MACHINE		TOTAL	
	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost
Preseeding	1.19	$1.02	1.16	$1.66	1.64	$ .99	3.99	$3.67
Seeding	.28	.25	.23	.33	.30	.41	.81	.99
Summer	.05	.05	.05	.06	.05	.08	.15	.19
Harvest	.82	.69	.21	.28	.92	3.58	1.95	4.55
TOTAL	2.34	$2.01	1.65	$2.33	2.91	$5.06	6.90	$9.40

Table 17 and 18 above, record the average time and expense involved in Field Operations in the production of an acre of crop. Time and expense have been analyzed exclusive of land, building and material costs. All labour, power, and machine use in growing and harvesting the crop are shown above.

Custom work and field hauling were included in the time and cost Tables above. The 1961 rapeseed schedule is similar to Table 17 except for the exclusion of custom work. To make it comparable to 1962, the item of custom expense - 40 cents per acre [1] should be added.

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[1] Cost of Oil Seed Production (Alberta, 1961) - Appendix, Page 2.

Table 18 above, sets out the account of time and expense in field operations on wheat. All other costs have been excluded as in Table 17.

Cultural procedure in preparation and production of the two crops was similar and this fact allowed close comparison in field time and field expense.

It was found that machine time was greater than man or tractor time. This reflects the favored practice of pulling several implements in tandem. The machine charge per hour was heaviest. Self-propelled machines tended to raise Machine Costs above the Labor and Tractor Costs.

Comparison of Costs of Field Operation - Wheat and Rapeseed

The total input of time was 6.46 hours for rapeseed, 6.90 hours for wheat. The total expense for rapeseed was $9.15, for wheat - $9.40 per acre. Harvesting was the most expensive item for both rapeseed and wheat, being $5.07 and $4.55 respectively. Summer expense was negligble for rapeseed. It was significant for wheat at 19 cents per acre, this amount being due to weed-spraying operations.

In observing the "Total" columns, it can be seen that rapeseed time and expense is less than that of wheat in preseeding, seeding, and summer operations, but is higher in harvesting. The procedure of swathing and combining is common to both crops in this area, but additional time and care was required in combining to save the small rape seeds.

The ratio of expense in both crops, in terms of Labor, Tractor, and Machine expense was 20%, 25%, and 55% respectively. In regard to rapeseed, the total time per acre in 1962 was lower than in 1961 by 1.5 hours and the expense per acre was also lower by 82 cents. This decrease in each case was due to a decrease of 23% in the proportion of land summerfallowed in preparation for the rapeseed crop.

Approximately 60% of the rapeseed crop was on summerfallow, 85% of the wheat was on summerfallow; so the slight additional wheat expense per acre may be attributed to greater preseeding costs. However, in the Red Deer - Didsbury area, this study indicates that cultural operations are similar for wheat and rapeseed and the expenses in that respect are fairly close.

PART VI - INCOME AND EXPENSE

Assumption of Ownership

There were share arrangements in both rapeseed and wheat enterprises. Such arrangements vary greatly in value from year to year, depending on the weather and other conditions. They cannot be said to have a constant relationship to land values or customary rental charges in the area.

In this study in the calculation of averages, the assumption was undertaken that all land was owned. The charges for land use were then made on that basis. In the personal report to each participating farmer, the share arrangement was applied and included in the analysis of his personal enterprise.

The following Table deals with the average Income and Expenses per acre which were experienced in the production of rapeseed and wheat. Prices per pound were assessed at 3.8 and 2.42 cents (Page 16). The Net Return indicates the margin after all resource inputs were costed.

TABLE 19 SUMMARY OF INCOME, EXPENSES, AND NET RETURNS - PER ACRE

	Group Averages	
	Rapeseed Per Acre	Wheat Per Acre
Number of Farms Studied	39	30
Average Yield in lbs. per Acre	898.5	1,980.4
RECEIPTS:	$	$
Sale of Crop	34.00	48.00
Other Income from Crop	-	-
Value of Crop on Hand a/	-	-
Gross Returns	34.00	48.00
EXPENSES:		
Seed	.72	2.36
Seed Treatment	-	.15
Fertilizer	1.32	1.59
Weed Spray	.13	.26
Insect Spray	.06	-
Bird Repellents	-	-
Crop Insurance	.06	.12
Fees	-	-
Miscellaneous	-	-
Total Materials & Services	2.29	4.48
Land Tax	1.80	1.90
Water Rights	-	-
Rent or Shares	-	-
Int. on Land to Crop	5.28	6.15
Int. on Bldgs. to Crop	.04	.26
Dep'n on Bldgs. to Crop	.09	.51
Total Overhead (less equip. overhead)	7.21	8.82
Labor	1.82	1.99
Tractor Use	2.10	2.29
Machine Use	5.23	5.21
Truck Use	-	-
Custom Work	-	-
Total Labor & Equip. Cost	9.15	9.49
TOTAL CROP COSTS	18.65	22.79
NET RETURNS	15.35	25.21

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a/ Assumption for purpose of study - All crop sold.

Income Summary

Table 19 lists two schedules of receipts and expenses. They are the average of all rapeseed and wheat enterprises weighted by the number of acres. Neither one represents a typical farm. Each, however, establishes a middle ground between the extremes of the high and low farms.

Several items of expense may deserve comment. In reference to rapeseed, the amount of 13 cents for weed spray represents the cost of Avadex, not 2-4-D, which cannot be used on rapeseed. The relative tax charges between rapeseed and wheat do not signify that higher priced land was used for wheat. It signifies that a larger proportion of summerfallow land was seeded to wheat, and that land had to bear tax charges of the summerfallow year and the crop year. The same relation occurred in the assignment of the interest charge on the value of the crop land.

The comparison of profitability between wheat and rapeseed is probably the item of greatest interest to growers of the two crops. The Net Returns per acre of $25.21 and $15.35 shows that according to the 1962 experience on the study farms of the Red Deer - Didsbury district, wheat production had a net profit advantage in the neighborhood of $10.00 over rapeseed.

It may be seen that the costs arising out of the use of labor and equipment are very close - $9.15 in rapeseed and $9.45 in wheat. Overhead, exclusive of equipment is heavier for wheat because of larger summerfallow use. Seed costs, treating, cleaning, weed spraying and fertilizer use are considerably less for rapeseed than for wheat. The cost of cleaning and treating wheat occasionally went as high as 25 cents per bushel. Much of the wheat was treated at home and thus part of such charges have been charged in the labor and equipment section of the Table.

Finally, in considering the Receipts division in the first part of the Table, the comparative weights per acre are given in pounds. This has been done to remove the impression which the unequal 50 lb. and 60 lb. bushels might suggest. The relative prices are: Rapeseed - 3.8 cents per lb. and wheat - 2.42 cents per lb. For those who prefer bushel prices they are $1.90 per bushel and $1.45 per bushel respectively.

The immediate economic superiority of wheat as indicated by the analysis of the study farms is due mostly, in this crop year, to the greater yield. In 1961, which was a very dry year in part of the study area, the net wheat yield was less than 1,200 pounds [1/] and Rapeseed at 4.5 cents per lb. had an advantage per acre over Wheat of approximately $16.00.

The quoted price of rapeseed climbed from $3.88 on September 13th to $5.58 on February 10th. Thus a four-month delay in making a sale for cash would have benefited a farmer price wise by $1.70 per hundred pounds.

1/ Cost of Oil Seed Production (Alberta - 1961).

Net Returns

"Returns" from a farm enterprise do not always mean the same thing to all farmers. In this analysis, Net Returns means the remainder or profit after all inputs of labor, material and non-cash items have been charged, and subtracted from the sales value of the crop. Many farmers tend to think that non-cash costs are not expenses, and they will quote their bank cash balance in support, thus showing an inflated Net Return. That conception is widespread enough to deserve an illustration.

The Rapeseed account (Group Average) from Table 19 has been used for that purpose as shown below:

TABLE 20 RELATIONSHIP BETWEEN CASH AND NON-CASH COSTS AND NET RETURNS

	Per Acre	Per Farm
RECEIPTS:	$34.00	$2,459.91
EXPENSES:		
Cash	6.29	454.86
Non-Cash		
1. Depreciation (bldgs. & equip.)	3.61	261.42
2. Int. on Invest. (bldgs.,equip. & land)	6.93	501.53
3. Operator labor	1.82	131.99
TOTAL EXPENSES	18.65	1,349.80
NET RETURNS	$15.35	$1,110.11

Referring to the "Per Farm" column, the only cash costs paid out during the year amounted to $454.86. When that is subtracted from receipts of $2,459.81, there is a remainder of $2,005.05. This $2,005.05 could be the actual increase in a bank account in respect to the foregoing example, but is not the true Net Return. The amount of $261.42 has been invested at some time in the past and therefore is a cost to be recovered. The amount of $501.53 is a charge for the use of invested capital. The amount of $131.99 is the cost of a specific amount of labor at the going rates. When all costs are consolidated, they amount to $1,349.80. The Net Return is $2,459.81 - $1,349.80 = $1,110.11. This is not nearly as large as the bank account figure of $2,005.05 quoted earlier in the paragraph, but is the true margin above all costs.

PART I - CONDITIONS OF STUDY

Area and Sampling

Since sunflowers were introduced into Alberta in 1958 for the production of oil, the major part of the crop has been grown on irrigated land. In 1962 there were 1,600 acres of sunflowers under irrigation and 900 acres seeded on dryland. From the total acreage, 778 acres of the former and 611 acres of the latter were included in this production study.

There has been a considerable decrease in the acreage over the four years of production. The extent of the total crop seeded in each of the years, 1958 to 1962 inclusive, was successively 3,700 acres, 17,000 acres, 6,500 acres, 4,000 acres and 2,500 acres. The competition for water has been severe between the various irrigated crops in the last three years. This may have had a restraining effect on growers' plans for the extension of sunflower acreage.

Wheat is the accompanying crop under study. Most of the 37 farms had both wheat and sunflower enterprises. On these 37 farms there were 15 wheat and 32 sunflower enterprises on study in irrigation and 18 wheat and 8 sunflower on dry land. For the purpose of the study, wheat was considered to be Spring Wheat. Only in the individual reports was the actual type of wheat differentiated into Durum, Soft White Wheat, etc.; and the personal analysis was made with reference to those types.

Varieties - Wheat

The varieties of wheat which were grown in this southern area were similar to those in the Peace River and Red Deer areas (Page 13) with the addition of Durum, Winter Wheat and Soft Spring Wheat. Hard red spring wheat, winter wheat, and macaroni and pastry wheat of high quality are commonly grown here. The soft white pastry wheat is usually grown under contract to flour mills in this area.

Varieties - Sunflower

Admiral was the sunflower variety grown on dryland in 1962. The variety grown under irrigation was "Advance". This represented a certain degree of change in practice from previous years. Admiral had formerly been grown on irrigated land, but it was observed that heavy irrigation caused more stem growth than seed development, so the Advance variety took its place in 1962.

The refining of sunflower seed produced a vegetable oil superior in clarity, stability, and utility, to that of many other sources. The extraction percentage is about 28% oil, with the remainder being high quality oil meal, soapstock, and hulls. In rapeseed extraction, the yield of oil is comparatively higher, being about 42%, but it is of slightly lower quality, and the oil meal is not regarded as highly.

PART II - LAND USE

Allocation of Cropland (Irrigation)

The following Table is an arrangement of the crops and other land showing the total acres on the 29 irrigated farms which were included in the study in 1962. Certain fields of wheat were taken at random from each farm for analysis of costs and returns. The total acreage of irrigated sunflowers was included in the study. The proportions of Irrigated and Dry land are listed in the Table.

TABLE 21

CROP DISTRIBUTION
(29 Irrigated Farms)

	Irrigated Acres		Dry Acres		Acres Per Farm	
	Number	% a/	Number	% a/	Irrigated	Dry
Wheat	861	14	2,292	25	30	79
Sunflowers (Irrigated)	778	12	-	-	26	-
Oats	677	11	137	2	23	5
Barley	712	11	559	6	25	19
Other Crops	1,334	21	602	7	47	21
Greenfeed & Hay	638	10	89	1	22	3
TOTAL CROPPED	5,000	79	3,679	41	173	127
Summerfallow	1,024	17	2,739	30	35	94
Tame Pasture	260	4	110	1	9	4
TOTAL CULTIVATED	6,284	100	6,528	72	217	225
Waste & Wild Pasture	-	-	2,536	28	-	87
TOTAL FARM ACRES	6,284	100	9,064	100	217	312

a/ To nearest whole number.

The irrigated farms in most cases contained a large percentage of land not yet under the ditch. The total acres of irrigated and dry land on these farms were respectively 6,284 and 9,064 acres.

The irrigated acreages of wheat, sunflowers, oats and barley in total did not differ greatly in extent. Other crops, a general classification of Sugar Beets, beans, flax, mustard, alfalfa, fresh vegetables, and canning crops, occupied almost twice as much acreage (1,334) as any irrigated crop except wheat. The sunflower crop area of 778 acres can not be considered typical of the Southern Alberta irrigated districts because the farms above were chosen on the basis of there being a sunflower crop. The item of 1,024 acres of summerfallow on irrigated land shows that one-sixth of the cultivated land was kept black during the crop year.

The total Dry land acres on the irrigated farms amounted to 9,064 acres, which is 1½ times the area under irrigation. Wheat, at 2,292 acres is equal to one-quarter of the total farm area. The oat crop at 137 acres, was the smallest cereal crop. The importance of the summerfallow practice is indicated by the 2,739 acres, which is approximately one-third of the total dry acres.

The divisions of land use for the average farm is shown in Table 21 in the columns on the right. The average size of the farms under study in 1962 was 592 acres (the addition of 217 Irrigated and 312 acres, Dry). These columns also reveal two characteristics of note. The first is that the irrigation farming practice tends towards the production of cereal crops of more or less equal size, plus variety of special crops. The second is that Dryland farming practice tends towards one major crop and several minor ones.

Allocation of Cropland (Dryland Area)

Table 22 below is similar in construction and purpose to Table 21 on Page 25. The important difference is that the 8 farms included in this Table are completely dry farmed. From this group of farms, all the sunflower crop and 2,000 acres of the wheat crop were chosen for study.

TABLE 22

CROP DISTRIBUTION
(8 Dryland Area Farms)

	Total Acres	As % of a/ Total Acres	Acres Per Farm	As % of a/ Cult. Acres
Wheat	2,870	19	359	24
Sunflowers (Dry)	611	4	76	5
Oats	685	5	86	6
Barley	635	4	79	6
Other Crops	1,359	9	170	12
Greenfeed & Hay	265	2	33	2
TOTAL CROPPED	6,425	43	803	55
Summerfallow	5,165	34	646	44
Tame Pasture	160	1	20	1
TOTAL CULTIVATED	11,750	78	1,469	100
Waste & Wild Pasture	3,370	22	421	
TOTAL FARM ACRES	15,120	100	1,890	

a/ To nearest whole number.

The "Total Acres" column in the preceding Table shows the distribution of all farm land in the Dryland group of farms. Wheat (2,870 acres), occupied the greatest single acreage under crop. Sunflowers and coarse grains acreage were relatively minor. Other crops, which were mainly flax, mustard and rye, occupied 1,359 acres. Summerfallowed land amounted to 5,165 acres - approximately 44% of the cultivated land, or 34% of the total farm acres.

The distribution of acres per farm, on an average basis, is shown in the third column. The fourth column sets out the percentage relationships of individual crops

and summerfallow to the total cultivated acres. Growing crops utilized 55% of the cultivated acres per farm. Of them, wheat was the greatest, being 24% of all cultivated land.

PART III - CROP YIELDS

Sunflowers and wheat were grown on stubble land as well as summerfallow. Yield differed in each case, with the greater being received on irrigated land. In order to provide a comparison in addition to yields, dollar values per acre of crop have been included in the following Tables.

The basis of valuation for wheat in Southern Alberta was Grade No. 3 hard red spring wheat assessed at 2.5 cents per lb. ($1.50 per bus.) delivered at the elevator.[1] Sunflower seed was graded No. 1 C.W. at the refinery. In this study the federal floor price of 4.22 cents per lb. ($1.27 per bus.) was taken as the delivered price.[2] Dockage on sunflower deliveries ranged between 2% and 10%. Wheat dockage averaged 3%.

The comparative yields and values below, have been developed from 40 sunflower enterprises and 33 wheat enterprises selected from the 37 farms on the sunflower study.

TABLE 23 GROWN ON IRRIGATED SUMMERFALLOW

Number of Enterprises		Acres	Total Yield bu.	Net Yield bu.	Net Yield Per Acre bu.	Value Per Acre
Sunflowers:	4	72	2,381	2,108	29.1 (872.3 lbs.)	$36.81
Wheat:	8	318	12,035	11,673	36.7 (2,202.5 lbs.)	$55.06

TABLE 24 GROWN ON IRRIGATED STUBBLE

Number of Enterprises		Acres	Total Yield bu.	Net Yield bu.	Net Yield Per Acre bu.	Value Per Acre
Sunflowers:	28	706	14,163	12,805	18.1 (544.2 lbs.)	$22.97
Wheat:	7	225	7,130	6,916	30.7 (1,844.3 lbs.)	$46.11

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[1] F.M.D.M. 203-10, Alberta Department of Agriculture.

[2] Federal support price.

Upon examination of Tables 23 and 24 on Page 27, a general relationship between wheat and sunflowers may be seen. The net yield per acre in Table 23 shows that wheat yielded a net of 36.7 bushels per acre and sunflowers yielded a net of 29.1 bushels per acre. The conversion of these amounts to pounds is 2,202.5 pounds and 872.3 pounds respectively. This allows a more equitable comparison of weight of crop per acre. Gross sunflower seed value was $36.81 per acre. Gross wheat value per acre was $55.06. Wheat production thus outyielded and outvalued sunflower seed.

Table 24, Page 27, sets forth the comparative yields and values of wheat and sunflowers grown on irrigated stubble. Under this condition, these two crops yielded respectively 30.7 and 18.1 bushels per acre. The weights and values per acre were 1,844.3 lbs. of sunflower at a value of $46.11 and 544.2 of sunflower seed at a value of $22.97.

From these relationships it appears that the irrigated sunflowers, whether grown on summerfallow or stubble, produced a crop of less weight and value than wheat. This was true in 1961 for sunflowers on stubble, but not true on summerfallow when drouth had reduced wheat yield to 9 bushels per acre on study farms.

TABLE 25 GROWN ON DRYLAND SUMMERFALLOW

Number of Enterprises	Acres	Total Yield bu.	Net Yield bu.	Net Yield Per Acre bu.	Value Per Acre
Sunflowers: 6	376	450	422	11.2 (337.0 lbs.)	$14.22
Wheat: 13	2,605	40,010	38,825	14.9 (894.2 lbs.)	$22.36

TABLE 26 GROWN ON DRYLAND STUBBLE

Number of Enterprises	Acres	Total Yield bu.	Net Yield bu.	Net Yield Per Acre bu.	Value Per Acre
Sunflowers: 2	235	2,001	1,857	7.9 (237.1 lbs.)	$10.00
Wheat: 5	417	3,194	2,098	7.4 (445.8 lbs.)	$11.15

In reference to Table 25 above, under dryland conditions of production, wheat on summerfallow produced 894.2 lbs. per acre, valued at $22.36. Sunflowers produced less, 337 lbs. per acre valued at $14.22. On Dryland stubble, wheat production and value per acre was 445.8 lbs. and $11.15. Sunflower seed production

was 237.1 lbs. valued at $10.00. The two instances only of sunflower production are a limiting factor in the analysis of this category.

Both these crops on dryland failed to produce well. Sunflowers yielded less seed than in 1961 on both summerfallow and stubble.[1] Wheat, at 14.9 bushels per acre on summerfallow yielded 1 bushel less than in 1961. Wheat on stubble at 7.4 bushels yielded 5 bushels more than in 1961. Local areas of precipitation in an otherwise dry region, caused the difference in this yield.

Under both conditions of dryland production, as outlined in Tables 25 and 26, the wheat crop exceeded the sunflowers in gross value and weight per acre.

Cultural Operations

The production of the wheat and sunflower crops requires differing practices except in the preparation of the seed-bed. In this latter item, however, a firmer seed-bed is to be preferred. Thus an additional time-over is often made with the harrows.

The hull of the sunflower seed is hard and oily. A considerably greater amount of moisture is required for its germination than for wheat, or a longer period of germination is necessary under similar moisture conditions. Therefore, the seed is rarely sown at a depth of less than two inches. Row planters were used on many of the farms in 1962. Ordinary press drills, with three or four adjacent grain spouts closed, were also used. Spacing between the rows varied from 22 inches to 36 inches.

Broad-leaf weeds and wild oats presented a problem on some farms. While 2-4-D and Avadex were used effectively in wheat for weed eradication, this could not be done with the highly susceptible sunflower plants. A procedure of cross-harrowing the sunflowers at a height of 4 to 6 inches was found to be satisfactory in moderate weed infestation. In addition, row cultivation was necessary during the summer to kill weeds, loosen the soil and provide corrugations for irrigation. Water application in the sunflower crop was thus much easier and more adequate than contour ditching in wheat.

During ripening and filling of the sunflower heads, blackbirds and sparrows proved to be the greatest pest. Automatic stationary guns and a certain amount of shotgun patrol was necessary to withstand their raids in certain irrigated areas, particularly near sloughs and wooded areas.

The sunflower crops were all harvested standing. A killing frost is usually required in order to stop growth and assist hardening of the seed and drying to 10% moisture content. Since the plants stay upright even under very adverse weather conditions, harvesting can usually take place after all other crops are

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1/ Cost of Oil Seed Production (Alberta - 1961).

harvested. The same combines which were used to harvest wheat also harvested the sunflowers - if the owner purchased a sunflower pickup for his machine. However, in practice, certain farmers purchased the modification and custom-harvested the sunflower seed for their neighbors.

The following Table lists the number of successive field operations in a comparison between wheat and sunflower crops.

TABLE 27 FIELD OPERATIONS

	Number of Times Over [a]			
	Irrigated		Dry	
	SUNFLOWERS	WHEAT	SUNFLOWERS	WHEAT
Preseeding operations:				
on fallow	7.0	7.0	6.4	5.8
on stubble	5.0	4.3	4.5	4.2
Seeding:	1.5	1.6	1.4	1.5
Summer operations:	3.0	2.1	2.1	0.5
Harvest operations:	1.0	1.8	1.0	1.6

[a] Tandem operations were regarded as two or more.

PART IV - FIELD OPERATIONS COSTS

Time and Cost per Acre on Field Operations

The following Tables, 28 and 29, are an account of time and cost of field operations in the sunflower and wheat enterprises. Four seasonal periods are listed with the relative expenses due to labour, tractor, and machine use. Operations under conditions of irrigation only, are shown in these Tables.

In consideration of the construction of the Tables, time and equivalent cost in each category have been totaled separately and then assembled in the two right hand columns. Of the three main categories of Field Costs, each includes the consolidation of operational costs under seasonal classifications, because seasonal operations can be easily separated for the purpose of analysis. This arrangement sets up the use of resources in a sort of sequence of projects, which characterizes Agricultural production and distinguishes it from secondary industries. The application of time relates to the operator, the tractor, and the machine (which includes vehicles). The total time as stated in the Tables is an accumulation of all such time in respect of the complete operation.

TABLE 28

IRRIGATED SUNFLOWERS
(29 Farms)

FIELD OPERATIONS	LABOUR		TRACTOR		MACHINE		TOTAL	
	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost
Preseeding	1.41	$1.19	1.23	$1.72	1.88	$ .98	4.52	$ 3.89
Seeding	.65	.53	.60	.77	.67	.90	1.92	2.20
Summer	2.83	2.29	1.78	2.18	2.15	3.38	6.76	7.85
Harvest	.57	.48	-	-	.72	3.83	1.29	4.31
TOTAL	5.46	$4.49	3.61	$4.67	5.42	$9.09	14.49	$18.25

TABLE 29

TIME AND COST PER ACRE ON FIELD OPERATIONS

IRRIGATED WHEAT
(15 Farms)

FIELD OPERATIONS	LABOUR		TRACTOR		MACHINE		TOTAL	
	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost
Preseeding	1.29	$1.06	1.29	$1.74	1.97	$ .93	4.55	$ 3.73
Seeding	.29	.24	.28	.38	.44	.49	1.01	1.11
Summer	1.33	1.09	.31	.39	.82	1.13	2.46	2.61
Harvest	.82	.67	.28	.36	.98	3.99	2.08	5.02
TOTAL	3.73	$3.06	2.16	$2.87	4.21	$6.54	10.10	$12.47

While a study of the individual items would show the proportions of cost attributed to the categories of Labor, Tractor, and Machine use, two short observations may sum up the relationships between the Field Operations in regard to the Sunflower and Wheat costs.

The first is that Sunflower Field Costs were greater than those of Wheat. These costs were $18.25 and $12.47 respectively, showing an amount of $5.78 in additional sunflower cost per acre. The second is that the sunflower summer expense, due to row cultivations, is the most important cause of the difference in field costs between the two crops.

A comparison between the cost of Field Operations in the sunflower crops, as shown in the 1961 Oilseed Report, and those of 1962, indicate that 25 cents per acre decrease in preseeding costs is due to a smaller proportion of summerfallow work in 1962. Summer expense increased by $2.31 due to closer company supervision of summer cultivations. In Table 28, custom harvesting time and cost were included in harvesting to make a total of $4.31. The comparable charge in 1961 was $2.01 + $3.02 ($5.03). Late harvesting in 1962 (October), under good harvesting conditions, appears to have resulted in lesser time and cost than in 1961.

TABLE 30

TIME AND COST PER ACRE ON FIELD OPERATIONS

SUNFLOWERS (DRY)
(7 Farms)

FIELD OPERATIONS	LABOUR		TRACTOR		MACHINE		TOTAL	
	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost
Preseeding	.59	$ .48	.59	$ .96	.87	$ .50	2.05	$1.94
Seeding	.26	.21	.25	.36	.27	.41	.78	.98
Summer	.39	.33	.39	.53	.40	.45	1.18	1.31
Harvest	.45	.57	-	-	.46	2.70	.91	3.27
TOTAL	1.69	$1.59	1.23	$1.85	2.00	$4.06	4.92	$7.50

TABLE 31

TIME AND COST PER ACRE ON FIELD OPERATIONS

WHEAT (DRY)
(14 Farms)

FIELD OPERATIONS	LABOUR		TRACTOR		MACHINE		TOTAL	
	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost	Hrs.	Cost
Preseeding	.76	$ .63	.76	$1.14	1.08	$ .52	2.60	$2.29
Seeding	.18	.14	.15	.21	.20	.32	.53	.67
Summer	.05	.04	.03	.04	.03	.04	.11	.12
Harvest	.56	.45	.03	.04	.59	2.61	1.18	3.10
TOTAL	1.55	$1.26	.97	$1.43	1.90	$3.49	4.42	$6.18

The Tables above present the use of resources in Field Operations during the four natural seasonal divisions of crop production. The time required and the accompanying cost are the average of the group on an acre basis.

Dry-farmed wheat from both Irrigation and Dryland areas were included in Table 31. The average size of the wheat crop was 216 acres. The total cost for sunflowers in field work per acre was $7.50. For the wheat the cost was $6.18. Wheat costs exceeded sunflower Field Costs only in Preseeding operations - ($2.29 against $1.94). This was because 86% of the wheat land had to bear summerfallow costs, whereas only 61% of the sunflower land had been summerfallowed. Summer work involving row cultivation in sunflowers accounted for the greatest difference in costs between the two crops. These costs were $1.31 for sunflowers and 12 cents for wheat.

In the previous year (1961), total Field Costs amounted to $7.38 plus 73 cents for custom work, together equalling $8.11. This was greater than the 1962 cost of $7.50 by 61 cents. The difference was largely due to 92% of the Dryland sunflower crop in 1961 being on summerfallow land and only 61% in 1962. This condition of cost is important because summerfallowing involves an additional year's costs.

PART V - INCOME, EXPENSES AND NET RETURNS

Income Summary

In the preceding Parts I, II, III, and IV of this Section, a comparison of the sunflower and wheat crops has been made in terms of Varieties, Crop Distribution, Yields under Dryland and Irrigation conditions, Cultural Practices, and Field Operations. Regardless of any single grower's choice of varieties, crop distribution or methods used in Field Operation, the success of his enterprise must ultimately be determined by the economic outcome - that is, "Did the operator secure a profit - or did he suffer a loss on the operation?"

In the Income Statements to follow, the receipts from the crops have been assembled, as have the expenditures for seed and materials, for land and building use, and for labor and machine use. The items have been set up on an acre basis so that any receipt or expense listed in the Table is an average developed from all the acres representing a particular crop.

Table 32 on Page 34 is an Income Summary of the wheat crop, showing total receipts and costs per acre under Dryland and Irrigation conditions. Receipts have been listed first, followed by the various divisions of expense, culminating in the margin of profit or loss arising out of the enterprise.

The Receipts Section states the Net Yield and its value per acre. All the crop was assumed to be disposed of in the crop year. The first group of expenses is composed largely of materials and services secured off the farm. The second group deals with the expenses attributable to land and building use. The third category of expense includes the use of labor, machines, and power in field work.

The Net Returns, the last item in the Table, is the return to the enterprise after all inputs of land, labor, and capital have been deducted from the receipts. Since interest on Capital has been included in expense, the Net Return may also be said to be the Returns to Management.

On Page 37, Table 33 outlines the items of Income and Expense in regard to the sunflower crops. The first column deals with the Dryland operations, the second and third with two distinct business arrangements under Irrigation and the fourth shows a consolidation of these Irrigation crop operations.

Accompanying these Tables, in the personal reports, are Pages 35-A and 39-A which contain statements in similar form to those on Page 34. These statements are the Income Summaries for each one of the participants in the study. Since this is not a case study, such individual statements are disclosed only to the persons concerned, and will therefore be found only in the reports to these individuals.

TABLE 32 SUMMARY OF INCOME, EXPENSES, AND NET RETURNS - PER ACRE

	Group Averages	
	WHEAT Dryland	WHEAT Irrigated
Number of Farms Studied	14	15
Average Yield in lbs. per Acre	829	2,054
RECEIPTS:		
Sale of Crop	$20.72	$51.01
Other Income from Crop	-	-
Value of Crop on Hand a/	-	-
Gross Returns	20.72	51.01
EXPENSES:		
Seed	1.81	2.81
Seed Treatment	.08	.13
Fertilizer	1.08	.82
Weed Spray	.18	.52
Insect Spray	.03	-
Bird Repellents	-	-
Crop Insurance	.11	.20
Fees	-	-
Miscellaneous	-	.02
All Materials & Services	3.29	4.50
Land Tax	1.43	1.33
Water Rights	-	3.32
Rent or Shares	-	-
Int. on Land to Crop	5.98	6.57
Int. on Bldgs. to Crop	.09	.26
Dep'n on Bldgs. to Crop	.18	.52
All Overhead (less equip.)	7.68	12.00
Labor	1.26	3.06
Tractor Use	1.43	2.87
Machine Use	3.49	6.54
Truck Use	-	-
Custom Work	-	-
All Labor & Equip.	6.18	12.47
TOTAL CROP COSTS	17.15	28.97
NET RETURNS	3.57	22.04

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a/ Assumption for purpose of study - All crop sold.

Income and Expenditure - Wheat

The preceding Table No. 32 on Page 34 shows that the comparative yields per acre of dry-farmed wheat and irrigated wheat were 829 lbs. (13.8 bu.) and 2,054 lbs. (34.2 bu.) respectively. The delivered values (Grade No. 3 at $1.50 per bu.) were $20.72 and $51.01.

Material expenses which were general cash expenses, amounted to $3.29 in column No. 1 and $4.50 in No. 2. The difference was due to greater seed costs, weed spray and crop insurance costs. The relative fertilizer expenses are interesting. Less fertilizer was used on the irrigated wheat. There was a great deal of irregularity in the application of fertilizer. Dry land wheat was usually planted before irrigated wheat and tended to receive fertilizer. If the rest of the fertilizer had to be allocated, the row crops received it.

Overhead expense due to land and building use was $4.32 greater per acre on the irrigated enterprises, Land tax expense on Dryland wheat was greater by 10 cents because of having to apply taxes for two years on a large proportion of land prepared by summerfallowing. However, the water tax of $3.32 and the 5% interest charge on the more valuable irrigated land ($6.57) contributed the major portion of the excess cost on the irrigated crop in this division of expense.

Field Operations costs due to Labor and Equipment use differed by $6.29 between the two crops. The much smaller applications of labor and machine use per unit of land show their effect in the relatively low cost of $6.18 per acre.

The total cost under irrigation was $28.97 and under dry-farming it was $17.15. These costs did not involve any unusual practices in 1962 and may be assumed to be close to normal.

The Net Returns to the irrigated wheat was $22.04 per acre. To the dry-land wheat the Net Returns were $3.57. One factor causing the low return to the latter crop stands out clearly. It is the yield of 13.8 bushels per acre. Only 2.3 bushels less would have placed the yield at the break-even point of $17.15 as calculated by the components in the Table.

The larger Net Return of $22.04 to the irrigated wheat shows a close relationship to that in Central Alberta (Page 21). The yield necessary to break even with the costs as stated in Table 32 was 19.3 bushels.

Personal Income and Expenditure accounts for those farmers who took part in the study have been placed on the special page following these comments. The presentation is the same as that shown on Page 34. The accounts may be profitably compared with Table 32 with consideration given to the points of analysis discussed on this page.

Table 33 on Page 37, sets forth the arrangement of Receipts and Expenses for the sunflower enterprise under study in 1962. All items refer to an acre of average production and are derived from total production weighted by the number of acres.

Dryland Sunflowers

Column No. 1, dealing with Dryland conditions can be distinguished from the others by lower yield per acre and the lower Material, Overhead and Field Operations expenses per acre. The foregoing divisions of expense were proportionately 21%, 32%, and 46% of the total cost.

Material costs of $3.42, relative to the corresponding Irrigation costs were half as large, due to lower seed use, fertilizer application, and bird repellent use. Overhead costs of $5.30 more nearly approached the irrigated crop figures. Two-thirds of the Dryland enterprises were on summerfallow, thus accounting for the high land tax charge of $1.23 per acre. Field operations costs of $7.49 were lower on dryland in every respect, reflecting the saving in time by the use of large machines.

Nevertheless, an average loss of $3.61 per acre was experienced. This must be ascribed largely to the drouth in 1962. The average yield of 293.6 lbs. per acre was somewhat less than half the yield in 1961. Only one-third of these growers showed a profit in 1962.

Irrigated Sunflowers

Columns No. 2 and 3 in Table 33, deal with averages of two groups of sunflower enterprises, both under irrigation. Column No. 2 refers to the growers who accepted a pre-set blanket price per acre, regardless of the crop outcome, and who agreed to a measure of company supervision. This arrangement was known as a Lease Contract. These lease contracts provided for payments of up to $55.00 per acre and free seed. The grower supplied the land, labor, and machines. The third column itemizes the receipts and expenses of growers who accepted a Straight Contract arrangement, under which they accepted all the risks of production and were prepared to receive a stated floor price per pound for their crop.

The crop yields of 635 lbs. and 529.4 lbs. per acre were both lower than that of the previous year, and about one-half the amount which might reasonably be expected on irrigated land. Undoubtedly, the drouth continuing from 1961 was one factor. The competition for water by other crops as a result, was also a limiting factor. Blackbirds were a menace and caused heavy losses of seed in some instances.

Column No. 4 is entitled "All Irrigated Sunflowers". All 29 irrigation accounts were included and receipts were calculated on a common basis of 4.22 cents per lb. This is an auxiliary account of receipts and expenses in which the Lease Contract was temporarily disregarded in order to place all farms on the same footing. The outcome was a loss of $8.73 per acre.

TABLE 33 SUMMARY OF INCOME, EXPENSES, AND NET RETURNS - PER ACRE

Group Averages - Sunflowers

	DRYLAND	IRRIGATED		
	Straight Contract	Lease Contract	Straight Contract	All Irrigated
Number of Farms Studied	7	14	15	
Average Yield in lbs, per Acre	298.6	529.4	635	574.8
RECEIPTS:	$	$	$	$
Sale of Crop	12.60	50.50	26.79	24.26
Other Income from Crop	-	-	-	-
Value of Crop on Hand [a/]	-	-	-	-
Gross Returns	12.60	50.50	26.79	24.26
EXPENSES:				
Seed	2.65	3.70	4.30	3.96
Seed Treatment	.08	.01	.03	.01
Fertilizer	.33	3.27	2.04	2.73
Weed Spray	-	-	-	-
Insect Spray	.01	.10	-	.06
Bird Repellents	-	.90	.52	.74
Crop Insurance	.24	.09	.12	.10
Fees	.11	.20	.23	.22
Miscellaneous	-	.01	.01	.01
All Materials & Services	3.42	8.28	7.25	7.83
Land Tax	1.23	.84	.82	.83
Water Rights	-	2.24	1.78	2.04
Rent or Shares	-	-	-	-
Int. on Land to Crop	3.96	4.13	3.63	3.92
Int. on Bldgs. to Crop	.03	.07	.01	.04
Dep'n on Bldgs. to Crop	.08	.12	.01	.08
All Overhead (less equip.)	5.30	7.40	6.25	6.91
Labor	1.59	4.12	4.97	4.49
Tractor Use	1.85	5.40	3.71	4.67
Machine Use	4.05	9.35	8.75	9.09
Truck Use	-	-	-	-
Custom Work	-	-	-	-
All Labor & Equip.	7.49	18.87	17.43	18.25
TOTAL CROP COSTS	16.21	34.55	30.93	32.99
NET RETURNS	-3.61	15.95	-4.14	-8.73

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a/ Assumption for purpose of study - All crop sold.

Income and Expenditure - Sunflowers

Yields

In reference to Table 33, page 37, the yields per acre are the first items of significance. The Dryland yield of sunflower seed at 298.6 lbs. was about 50% of the yields on Irrigation. The effect of drouth on this crop in 1962 is evident in the low yield. A large proportion of the dryland sunflowers by contrast in 1961, had received local showers resulting in twice as great a crop. The average yield on the whole group of irrigated sunflower enterprises in 1962 was 547.8 lbs.

Contracts

The income from the sale of the crop is the next important item. In this respect an explanation is due concerning the Lease Contract group. The agreement specified a definite payment per acre to the grower regardless of crop outcome, plus the value of necessary seed, in return for the grower's commitment to produce the crop under the supervision of the contractor. In practice, certain pest control material was also supplied by the contractor. For the purpose of analyzing all enterprises on the same basis, the contribution of seed and pest control was evaluated, and this benefit was added to the lease payment per acre. Then the equivalent amounts were set up as seed and pest control costs in the usual way to make them comparable to the Straight Contract accounts.

The receipt of $50.50 by growers producing under lease, therefore, reflects acre payments. The receipts of $12.60 (Dryland) and $26.79 (Straight Contract Irrigated) reflect production payments.

Costs

The material costs to the Dryland growers were less than those of the Irrigation growers, particularly in the application of fertilizer and bird repellents. Overhead costs were lower generally, with the exception of the land tax which includes the tax charge for the summerfallow year. The costs of Labor and Equipment use were about 50% of similar irrigation crop costs because of larger scale operations and the freedom from irrigation requirements. The total Crop costs of $16.21 exceeded the receipts of $12.60. Thus an average loss of $3.61 per acre was incurred.

The two Irrigation groups had similar Material expenses. The amounts were $8.28 and $7.25. The difference of $1.03 per acre was largely represented by additional fertilizer costs under Lease Contracts. This cost differential also appears in Labor and Equipment costs and may be due to these growers exerting additional effort under company supervision. The Total Costs per acre under Lease Contract were $34.55; under Straight Contract they were $30.93. The respective Net Returns were $15.95 and minus $4.14 per acre.

Net Returns

The margin of $15.95 to the Lease Contract growers is plainly an outcome of the payments which provided a higher Gross Return per acre. The average payment of $50.50 would have represented a yield of 1,197 lbs. on the basis of value of 4.22 cents per lb. The loss of $4.14 per acre to the other irrigated group of farms appears to be the result of the general low yield which in turn reflects the growing conditions in 1962, the second of two very dry seasons.

The consolidation of the accounts of both irrigation groups on the basis of common receipts at 4.22 cents per lb., as shown in the fourth column, Table 33 reveals a possible Gross Return of $24.26 per acre, a Cost of $32.99, and a possible Net Return of minus $8.73. The figure for Gross Return does not truly represent the receipts as they occurred in 1962, as do the costs. This statement serves to indicate a situation which might have occurred under the usual type of contract.

Individual Accounts

Page 39-A which was added to the reports going to cooperating sunflower growers, follows page 39 and contains the personal Income Statement. It has been set up so as to provide convenient comparisons with the various group averages of any category. As an aid to further interpretation of individual situations, it is suggested that reference be made to the remarks on this page and to those accompanying Tables 28 to 31.

PEACE RIVER

Rapeseed

Farmers in the general Peace River area have accepted rapeseed as part of their present cropping program. "Arlo" has been preferred over the alternative variety - Golden - because of the two to three week shorter maturity period.

Unlike the growers in the Central Alberta districts, the majority of those on study in Peace River straight-combined their rapeseed crops, whereas the Central Alberta group swathed the crop before maturity and tended to combine it before the cereal crops. An early frost in the first week of September, 1962 damaged crops over the major portion of Alberta. Rapeseed in Peace River suffered spotty damage depending on the stage of growth. The average yield amounted to 820 lbs. per acre, which is close to the long-term yield. About one-half the provincial yield in 1962 came from the Grande Prairie and Peace River districts. It was considered that the proportion would have been higher except for the early frost.

The costs of production amounted to $13.84 per acre in comparison to the costs to wheat of $15.03. The comparative Gross Returns were $30.54 and $30.84 respectively. This resulted in a net advantage of 89 cents per acre to the rapeseed crop.

Wheat

The estimated acreage of wheat in the Peace River - Grande Prairie areas in 1962 was approximately 450,000 acres, about four times that of rapeseed. The ratio of wheat to rapeseed acreage in the farms on the study was somewhat less than two to one.

These wheat crops suffered frost damage in common with most of the others in that district. The wheat was graded No. 5 Northern, usually. However, the yield averaged 21 bushels to the acre.

Seed and weed-spray costs created an excess of material costs over those of rapeseed. Machine use costs, on the other hand, were lower because of some growers using threshing machines, tractors, and racks in harvesting their rapeseed. Aside from such expenses as those named above, costs of production were similar in the Peace River area. The yield and price of the respective crops appeared to be the factors which most greatly affected the Net Returns. Because of the frost damage mentioned previously, the yield to grade were lower than would otherwise have been the case, particularly in regard to wheat. The Net Returns per acre, after all costs in 1962, were $16.70 to rapeseed and $15.61 to wheat. The item of $15.61 indicated the low yield of wheat. The item of $16.70 reflected the early sale of rapeseed at the price of $3.75 per cwt., relative to a later possible price of $5.30, and may also reflect the wisdom of reserving a portion of the crop for later sale.

RED DEER - DIDSBURY

Rapeseed

The main area in which rapeseed and wheat production were studied was that between Red Deer and Olds. The soil varied from light loam in the North to heavy black loam in the south. Other things being equal, such as cultivation, fertilization, and rainfall; the heavier soil produced the heavier crops.

The type of rapeseed favored on the study farms in 1962 was one with early ripening characteristics, medium height, and good yield. "Arlo" fitted these qualifications and was preferred over the Argentine type which, though a good yielder, ripens in 104 days in comparison to 90 days for the former.

Approximately 75% of those on study who grew rapeseed in 1961 also grew it in 1962. Of these, several were hailed out in midsummer and they plowed the crop down. There was some weed problem in fields of light or irregular germination. Weed spray could not be used as a weed control because rapeseed is a susceptible broad-leafed plant. Volunteer rapeseed growth in cereal grains occurred but was controlled by spraying.

Rapeseed production did not vary as widely between individual farms as in 1961. Though the average yield was lower by 116 pounds to the acre, production was more uniform than in the previous year because of more general rainfall. The relative amount of rainfall rather than the relative number of cultivations appeared to have had the greatest effect on yield in 1961 and 1962.

While the majority of rapeseed growers had contracts which they filled early in the fall, a significant amount of rapeseed was held and then sold outright as the price rose in the later months of 1962. The quoted price rose to $5.30 per cwt. because of the bidding of Janapese concerns for Canadian rapeseed.

The average Cost of Production per acre was lower than that of 1961 by $2.51 due to less of the rapeseed crop on summerfallow. The Net Return in 1962 of $15.35 above all costs, was less than in 1961 because of a combination of changes. They were -- a decrease of $1.96 per acre in land and share costs, a decrease of .7 cents per bushel in selling price, and a decrease in yield of 116 lbs. of rapeseed per acre.

Wheat

Field Operations for wheat production appeared to be similar to those used for rapeseed. The Cost of Production on the study farms, however, was higher than for rapeseed. This was due to three factors -- the additional cost of seed, the cost of weed spray, and the greater use of summerfallowed land. For these reasons, additional costs of $4.14 per acre over rapeseed costs applied to the wheat crop.

Both wheat and rapeseed crops had been hailed in some instances. However, the average wheat yield at 1,980 lbs. per acre was more than double that of

RED DEER - DIDSBURY (Cont'd.)

Wheat (Cont'd.)

rapeseed and therefore the relative yields were reversed as between 1961 and 1962. That reversal appears to be due mostly to the additional rainfall and its more fortunate timing for wheat in 1962. The average Net Return per acre above all costs for wheat in 1962 was $25.21 per acre in contrast to the amount of $15.32 for rapeseed.

SOUTHERN ALBERTA

The fact of the recurrence of three successive dry years -- 1960, 1961, and 1962, must be taken into consideration when analyzing the outcome of the sunflower and wheat enterprises in 1962. On September 4th, 1962, a province-wide storm brought high winds with snow and freezing rain into the area south of Strathmore and laid the sunflower stalks flat in some fields. The effect of those combined conditions is shown on Dryland Sunflowers in the ranges of 133 lbs. to 894 lbs. per acre and on Dryland Wheat in the ranges of 289 lbs. to 1,746 lbs. per acre. The all-over yields of sunflower seed and wheat were 298 lbs. and 829 lbs. respectively, both being low yields from an economic standpoint. While the yield of wheat more than covered costs, the sunflower grower could, on the average, break even only by foregoing the interest return on the land.

Crops grown under irrigation suffered or benefitted in accordance with the operator's idea of water priorities. Competition for water between crops was keen. The range in sunflower seed yield per acre was from 450 lbs. to 1,885 lbs. (Summerfallow) and from 95 lbs. to 1,523 lbs. (Stubble land). Irrigated wheat yields varied from 915 lbs. to 349 lbs. (Summerfallow) and 1,164 lbs. to 2,910 lbs. (Stubble land). The average sunflower yield was low -- 575 lbs. or 19.1 bushels. The wheat yield was better at 2,054 lbs. or 34.2 bushels per acre. The wheat growers received a good profit on the average. About one-half the sunflower growers received a good profit because of a satisfactory Lease arrangement. The other half on Straight Contract experienced a loss after all costs including interest charges. In order to compete with wheat on irrigation, the yield, the price, or both, would have to be increased.